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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/670,839	09/28/2000	Shigeru Hosoe	02860.0656	7690

22852 7590 10/21/2005

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER	
PSITOS, ARISTOTELIS M	

ART UNIT	PAPER NUMBER
2653	

DATE MAILED: 10/21/2005

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/670,839
Filing Date: September 28, 2000
Appellants: HOSOE ET AL.

Michael R. Kelly
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 8/29/05 appealing from the Office action mailed 3/31/05.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,481,530	**Ueda et al**	**01-1996**
6,119,485	**Hibino et al**	**09-2000**
5,759,457	**Inoue et al**	**06-1998**
5,181,141	**Sato et al**	**01-1993**
6,009,728	**Kashiwage et al**	**01-2000**

JP 11-268920, Takanobu, 05-1999 and MAT (machine assisted translation thereof).

WO 00/17691 (and equivalent US patent 6,504,975 as English translation thereof).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The application submits claims drawn to the following

I. An optical pickup device (system). claims; 1-8,10-12 and an optical rec/repr. system claim 25.

II. An optical element, claims 13-18,22-24 & 30.

III A molding surface, claim 16.

IV. A method of manufacturing a molding die, claims 28 & 29.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

I. 1. Claims 1-4,6,10 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ueda et al, further considered with Hibino et al.

The following analysis is made:

Claim 1	**Uedo('530)**
An optical pickup device for recording and/or reproducing information in an optical information recording medium, comprising:	**see abstract/title**
a light source to emit light flux having a central wavelength not more than 500 n m ',	**see fig. 5, light source**
a converging optical system to converge the light flux emitted from the light	**figure 5, objective lens**
source onto an information recording surface of the optical information recording medium,	**recording medium present**
and	
an optical detector to detect light flux reflected from the information-recording surface of the optical information recording medium or the light flux passing through the information recording surface of the optical information recording medium,	**inherently present, else system would not reproduce/read**
wherein the converging optical .system or the optical detector comprises at least one optical element and the optical element comprises	**see secondary reference with respect to table 1, col. 16, lines 25-54.**

at least one optical surface having a centerline mean roughness Ra not more than 5 nm.

With respect to claim 1,

Ueda et al (:530) discloses an optical system for rec/repr. in which a laser beam of less than 500 nm is relied upon. This beam is projected onto a record medium through appropriate optical elements including an objective lens - see discussion with respect to figure 5. The examiner concludes that the system inherently provides for a detector - i.e., appropriate optical elements to reproduce/read the reflected light because the system is described as including/embracing an optical recording/reading method - see the abstract. Alternatively, if such an element is not inherently present, then under 103 considerations, the use of such a detector so as to reproduce the information from the record medium would be obvious to one of ordinary skill in the ad so as to use the record medium of Ueda et al so as to reproduce such as recited on col. 16, lines 11-50.

There is no specific mentioning of the surface roughness of an optical element as recited.

Hibino et al discloses/teaches in this environment an overall press molding process for manufacturing optical glass elements having very precise/smooth surfaces - see col. 2 lines 32 to 44 for instance. In fact, the appropriate surface roughness is further disclosed at col. 4, lines 50-52.

It would have been obvious to modify the base system of Ueda et al and modify such with the above teaching from Hibino et al, motivation is to provide for very smooth/precise optical elements used in the environment of Ueda et al. Such smooth/precise optical elements assist in reducing optical distortions in the optical beams.

With respect to claim 2, it is noted that the objective lens in Ueda et al has two surfaces. Hence the examiner concludes that the above combination of references met the limitations, i.e., that both surfaces (of the objective lens for instance) are as recited.

With respect to claim 3, the examiner interprets the objective lens as meeting this limitation.

With respect to claim 4, the examiner interprets the objective lens as meeting this limitation.

With respect to claim 6, the examiner interprets the materials disclosed in the Hibino et al reference as meeting this limitation.

With respect to claim 10, the objective lens is present in Ueda et al.

With respect to claim 25, see the above analysis with respect to claim 1. The elements as recited are met as analyzed above.

Claim 5 is rejected under 35 U.S.U. 103(a) as being unpatentable over the art as applied to claim 1 as stated in paragraph 1 above, and further in view of Inoue et al.

The ability of selecting a resin or resin material for an optical element/lens is taught by the Inoue et al reference.

It would have been obvious to modify the base system as relied upon above with the additional teaching form Inoue et al, motivation is to reduce the overall weight of the optical system.

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the art as applied to claim 1 as stated in paragraph 1 above, and further in view of Sato et al.

The ability to provide for an optical lens with appropriate reflectance for the wavelengths in question is taught by the Sato et al reference - see the discussion of figures 1 and 2 for instance.

It would have been obvious to modify the base system of the references as relied upon above in paragraph 1 with the above teaching from Sato et al for the reasons stated in col. 1 line 39-55.

Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the ad as applied to claim 1 as stated in paragraph 1 above, and further in view of Ueda et al (6314064).

Claim 11 limits/identifies the optical element as being a collimating lens, while claim 12 limits it to an optical element used for the detection ability.

Ueda et al ('530) do not depict a collimating lens. Nevertheless, the use of collimating lens elements in this environment is further taught by the Ueda et al (1064) reference. Furthermore, the use of optical elements/as detectors is also taught by the Ueda et al (.064) reference.

It would have been obvious to modify the base system as relied upon in paragraph 1 above and further modify such a system to include a collimating lens as well as an optical lens for a detecting ability i.e., for their inherent use.

Providing this lens with similar/identical surface roughness is considered obvious, i.e., a manufacturer of the overall system would require an appropriate number of optical elements and since Hibino et al provides such smooth and precise optical elements, provision of multiple lenses for their various functional uses would be obvious - no need to order different lenses from different manufacturing sources.

II. Claims 13-14,18,and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hibino et al further considered with Sato et al.

Claim 13 and 30 are drawn to an optical element having at least one surface. This is considered present in the Hibino et al reference - see the discussion of manufacturing optical elements. Optical elements having appropriate surface roughness - as discussed at col. 4, lines 50-53 for instance.

With respect to' claim 13, the remainder of the claim is written in descriptive functional language.

There is no specific mentioning in Hibino et al of any reflectance, although the use of reflective layers in the manufacturing technique is discussed.

Sato et al, teaches in this ad the ability of placing/using/providing anti-reflection layers to reduce surface reflection.

Note in particular the description of figures 1 and 2. The noted wavelength and reflectance % are discussed.

It would have been obvious to modify the base system of Hibino et al with the above teaching from Sato et al, motivation is to reduce the overall surface reflection of the final optical element.

With respect to claim 14 and 16, although there is no discussion of plural surfaces, the examiner considers the final optical element available from the above combined references to have plural (two) surfaces.

With respect to claim 18, the material in Hibino et al is interpreted to meet this limitation.

With respect to claim 30, see the above analysis with respect to claim 13 and the description of the secondary reference focusing upon the wavelength and reflectance factors.

Claims 15,16,22,23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the art as applied to claim 13 above, and further in view of Ueda et al ('064).

The above reference do not specify that the optical element is aspherical, an objective lens, a collimating lens, or a lens for a detector element.

Ueda et al discuss various lenses - objective. collimating, as well as those for detecting signals.

As known, objective lenses are aspherical.

It would have been obvious to modify the base system as stated above in paragraph 5 and use such optical elements/rely upon such for an optical system wherein objective lenses,

collimating lens, and detecting lenses are normally needed in order to perform the overall optical pickup.

Claim 26 is rejected under 35 U.S.C. 102(e) as being anticipated by Hibino et al.

As far as the examiner can determine, the molding surface of the press mold in Hibino et al meets the desired functional limitation described in tie wherein clause of this claim. See the discussion with respect to col. 4 lines 50-53.

IV. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over either JP 11-268920.

Hibino et al or Kashiwagi et al each further considered with WO 00/17691 (Yamagata et al).

Jp 1 1-268920 teaches in this environment the ability of providing appropriate mechanisms) to yield an optical element (lens) with an appropriate surface roughness range.

Kashiwagi et al , teaches in this environment, appropriate mechanism(s) to yield an optical element (glass lens) having high surface accuracy with an appropriate surface roughness range - see the description of tables 1 for instance.

Hibino et al teaches in this environment appropriate mechanism(s) to yield an optical element with an appropriate surface roughness range.

There is no specific mentioning as to how the molds, which are used, are manufactured using diamond tools.

Yamagata et al - the US equivalent is provided to applicants as a translation of the WO document- discloses the normal ability in manufacturing a die molding for one-piece lens precision cutting using diamond tools is widely in use.

It would have been obvious to modify the base system of either Jp 11-268920, Hibino et al or Kashiwagi et al with the above precision cutting using diamond tools motivation is to use widely used manufacturing abilities and hence save resources such as time in not having to redesign the tools to manufacture the dies.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over the art as applied to claim 28 above, and further in view of themselves.

Claim 29 recites the roundness of the diamond tool to be a within a certain range. Although this range is not described in the above references, that there is a physical dimension to the roundness of the diamond tool is considered inherent. Since the surface roughness range is defined by the primary references to JP 11-268920, Hibino et al or Kashiwagi et al, it logically follows that there is a range for the roundness of the diamond tool in order to yield the surface roughness range. Hence the examiner concludes that the range of roundness defined in claim 29 would be obvious to one of ordinary skill in the ad in order to create a die for an optical lens having the recited surface roughness range.

(10) Response to Argument

I. Appellants' argue on pages 5-7 of their brief that the rejection with respect to claims 1-4,6,10, and 25 should not be confirmed, because:

a) one would not have been motivated to combine the disclosures as suggested by the Examiner.

Appellants' inventive insight focuses on the surface roughness limitation as claimed for those systems having the appropriate wavelength limitation. Neither document teaches such a coupling.

b) Hibino et al merely discloses glass substrates for magnetic disks and micro-lenses, and there is no suggestion of substituting the lens in Ueda et al for that of Hibino et al.

The examiner respectfully disagrees because as the overall elements, i.e., that of an optical system, and that of optical lenses with appropriate roughness limitations are established by the documents. Furthermore in keeping with ***In re Fine,***, 837 F.2d 1071, 5 USPQ2nd 1596 (Fed. Cir. 1988) and ***In re Jones*** 958 F.2d 347, 21 USPQ2nd 1941 (Fed. Cir. 1992) the examiner has presented rational as stated above, i.e., the ability to provide for extremely smooth optical element surfaces. Such smooth surfaces yield a desired ability of reducing unwanted distortions/aberrations into the light beams both to and from the optical record. Hence the ability, i.e., reduction of these distortion(s) is motivation to combine.

With respect to the arguments against the rejection of claim 5 as presented on pages 7-8 of appellants' brief, the examiner maintains the position. Inoue et al is not relied upon for the roughness nor overall optical system. It is relied upon for the teaching of resin as a material for an optical lens. Such a teaching is considered properly combined for the reasons stated above.

With respect to the arguments against the rejection of claims 7 and 8 as stated on pages 8-9 of appellants' brief. Again, these are dependent claims, and as such the Sato et al reference is not relied upon for meeting the independent claims. Rather, it teaches the ability of an anti-reflection film. The examiner concludes that the concept of having anti-reflection films used in the optical arts for their inherent function – reduction of reflection is common. Sato et al does provides for a particular anti-reflection film meeting the claimed reflectance and wavelength as recited. Those of ordinary skill in the art would be motivated to reduce the reflection in the desired wavelength of the system established.

With respect to the arguments against the rejection of claims 11 and 12 as presented by appellants' on page 9 of their brief, the examiner maintains his position. The dependent claim limitations are present.

II. **With respect to** appellants' arguments against the rejection of claims 13,14,18 and 30 – the optical element as presented on pages 9-10 of appellants' brief, the examiner maintain his position. One of ordinary skill in the art would have been motivated for the reasons stated above in combining the overall teachings from Hibino et al with Sato et al as stated above. The examiner cannot follow appellants' argument that because Sato et al teaches a multi-layered anti-reflection film directly on or indirectly on an optical element as teaching away from a glass micro lens of Hibino et al the combination is novel.

Again, the references are relied upon for all that they teach, and Sato et al most definitely teaches anti-reflection film(s) for an optical element.

With respect to the arguments against claims 15,16,22,23,24 as stated on page 10 of appellants' brief, that Hibino et al fails to disclose an aspherical surface. It is noted that this limitation is only found in claims 15 and 16 – see "is an aspherical surface" language therein. As stated in the rejection, objective

lenses are known to be aspherical and as relied upon in the rejection such a lens is depicted in Ueda et al, i.e., the objective lens in Ueda et al is aspherical.

III. With respect to the argument(s) presented against the rejection of claim 26, as stated on page 11 of appellants' brief, the examiner maintains his position.

Hibino et al most definitely does disclose a die. This die does have an aspherical surface – see figure 3 for instance and its disclosure starting at col 19 line 54 in the specification, where the die is element 19. Note the curved surface, as well as the discussion of table 3 found at col. 22.

IV. With respect to appellants' arguments against the rejection of claim 28 as stated on page 12 of the brief, the examiner maintains his position.

a) JP 11-268920 most certainly describes – see the abstract for instance, as well as the accompanying MAT (machine assisted translation) of a manufacturing capability and appropriate mechanism(s) thereto. As noted in paragraph 028 thereof, the average surface roughness (Ra) is 1.1 – 20 nm, hence the transferring surface limitation is present.

b) Kashiwagi et al – also disclose a manufacturing method for optical elements, and as noted in table 1 – see col. 7 lines 35 plus, the surface roughness values.

c) Hibino et al – also disclose a manufacturing method for optical elements with the particular roughness range – see col. 4 lines 50 plus.

Yamagata et al – see the US equivalent – which is relied upon as an English translation for the WO Yamagata et al document, at col. 2 lines 15 plus describe a step for precision cutting by using a diamond bit.

The examiner agrees there is no depiction of a SUPER PRECISION LATHE. Nevertheless, the examiner concludes that the use of lathes for cutting blanks is routine in the manufacturing environment, and furthermore such machine tools are well known. With the need of micro-lenses, obviously the lathe must be precise and the greater the precision the better the result and hence a "super-precision" lathe is necessary for the inherent savings of time.

With respect to appellants' arguments against the rejection of claim 29 as stated on page 12 of their brief, the examiner maintains his position as stated in the above rejection.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the examiner in the Related Appeals and Interferences section of this examiner's answer identifies any related proceedings.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

A. M. Psitos

Conferees:

M. Edun

W. Young

H. Nguyen

FIG. 1

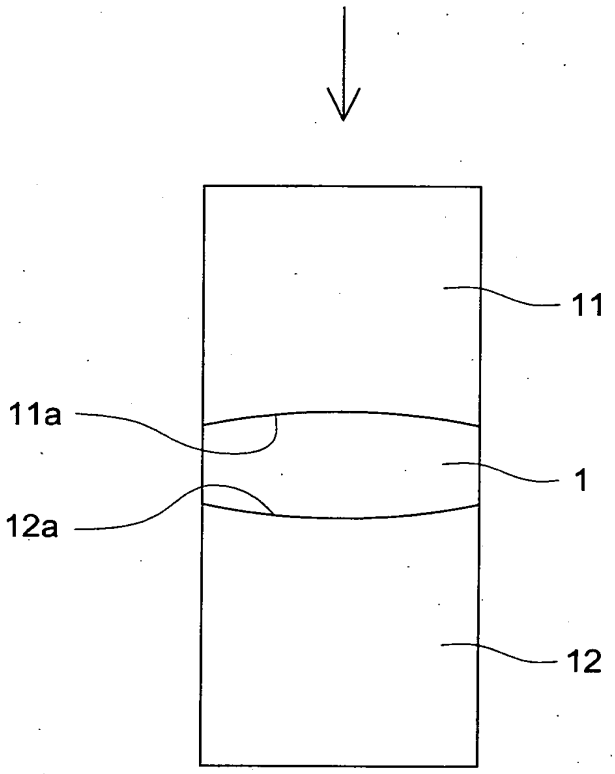


FIG. 2

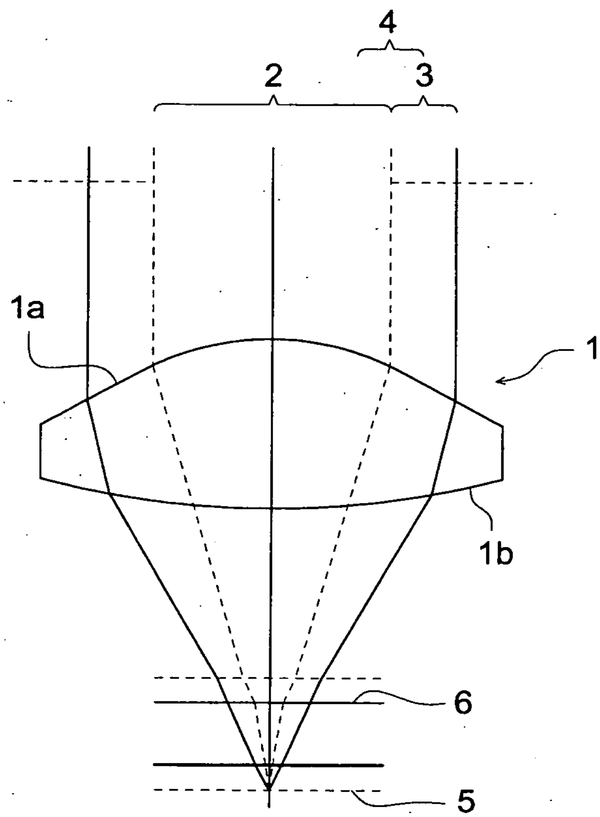
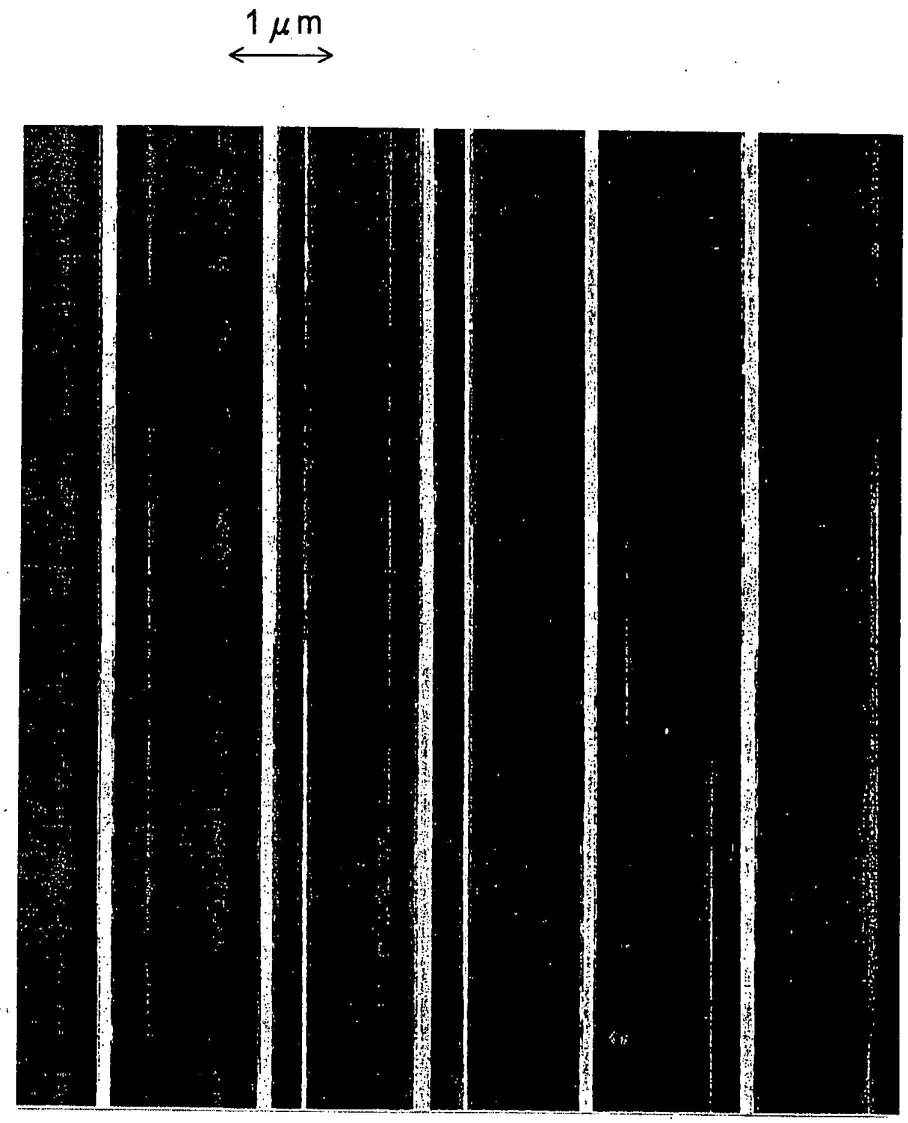
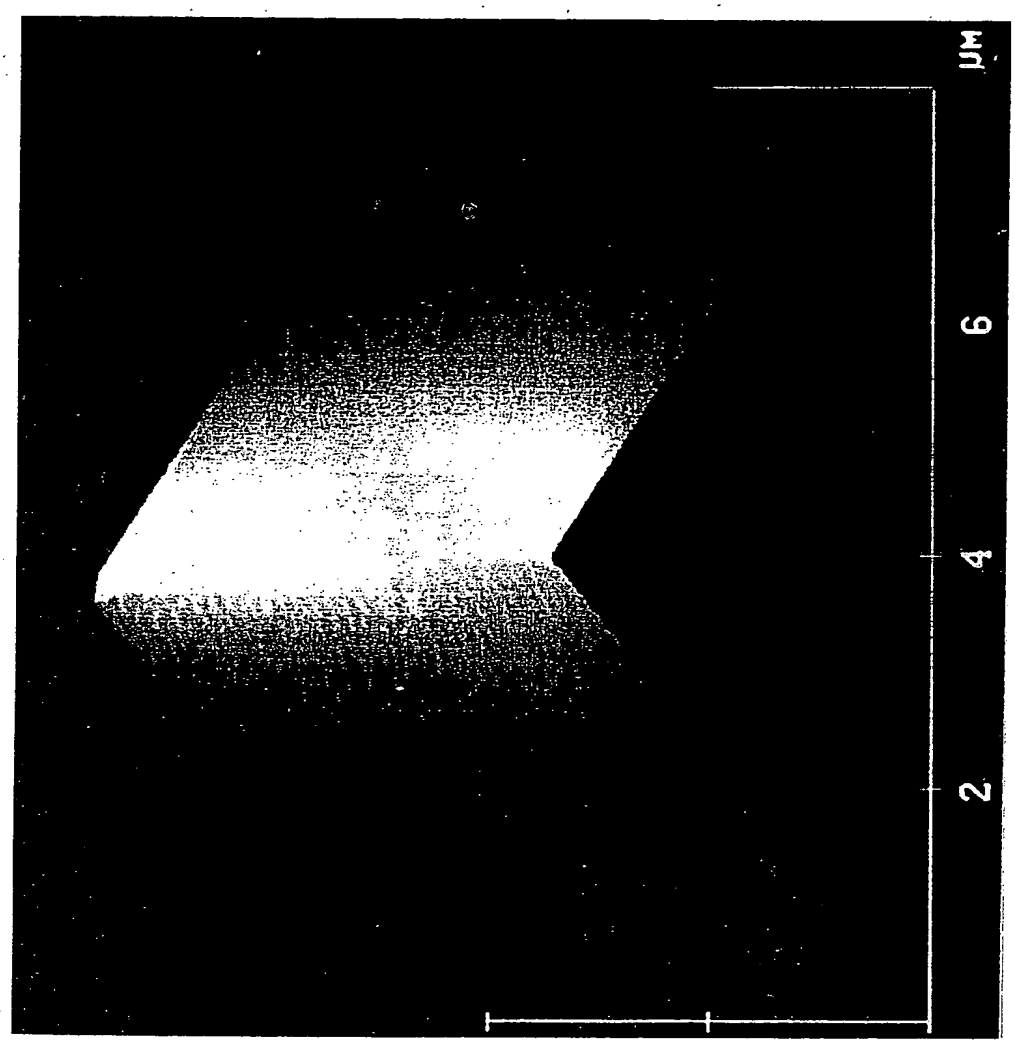


FIG. 3



Cut new mold material after 3 km length cutting



Diamond tool cutting edge after 3 km length new mold material cutting

FIG. 4

FIG. 5

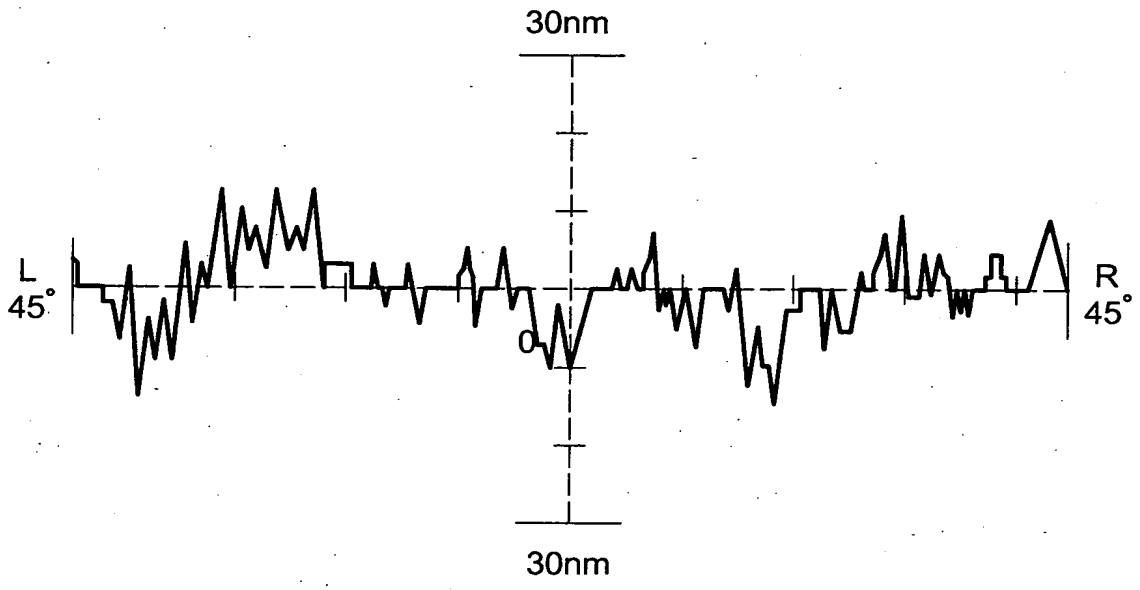
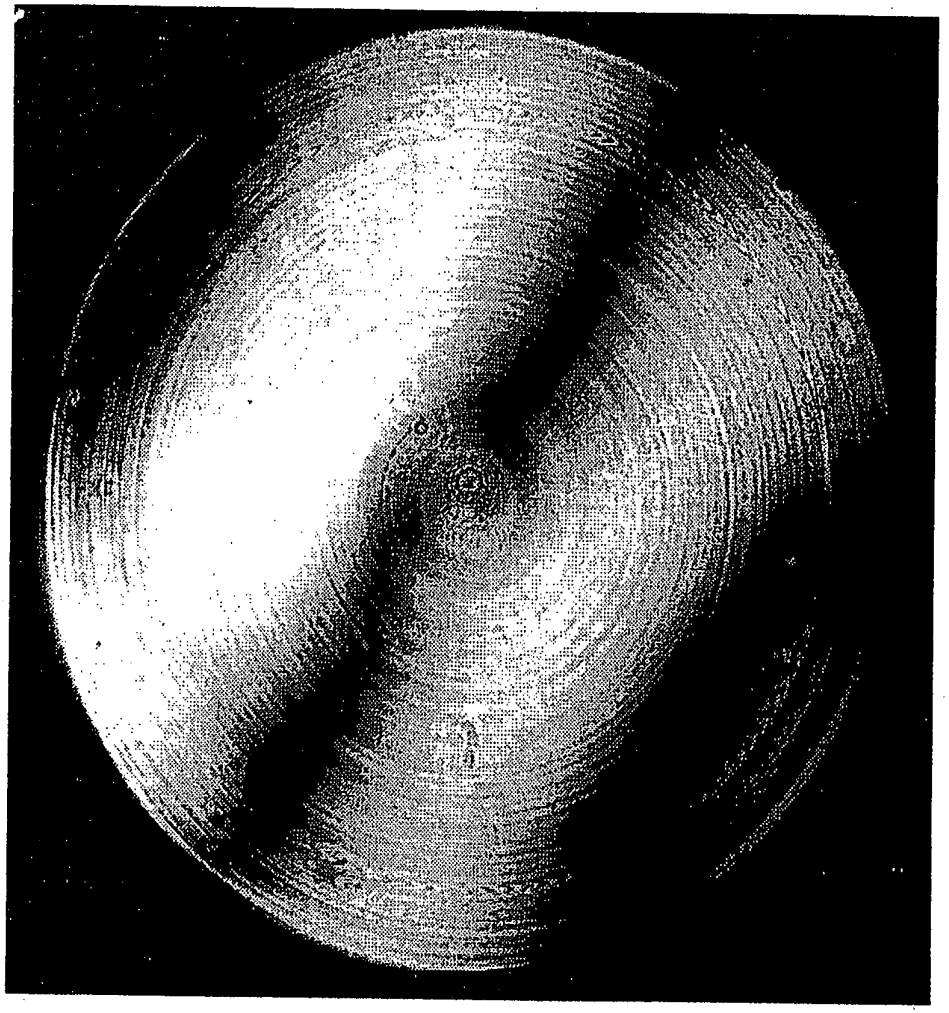
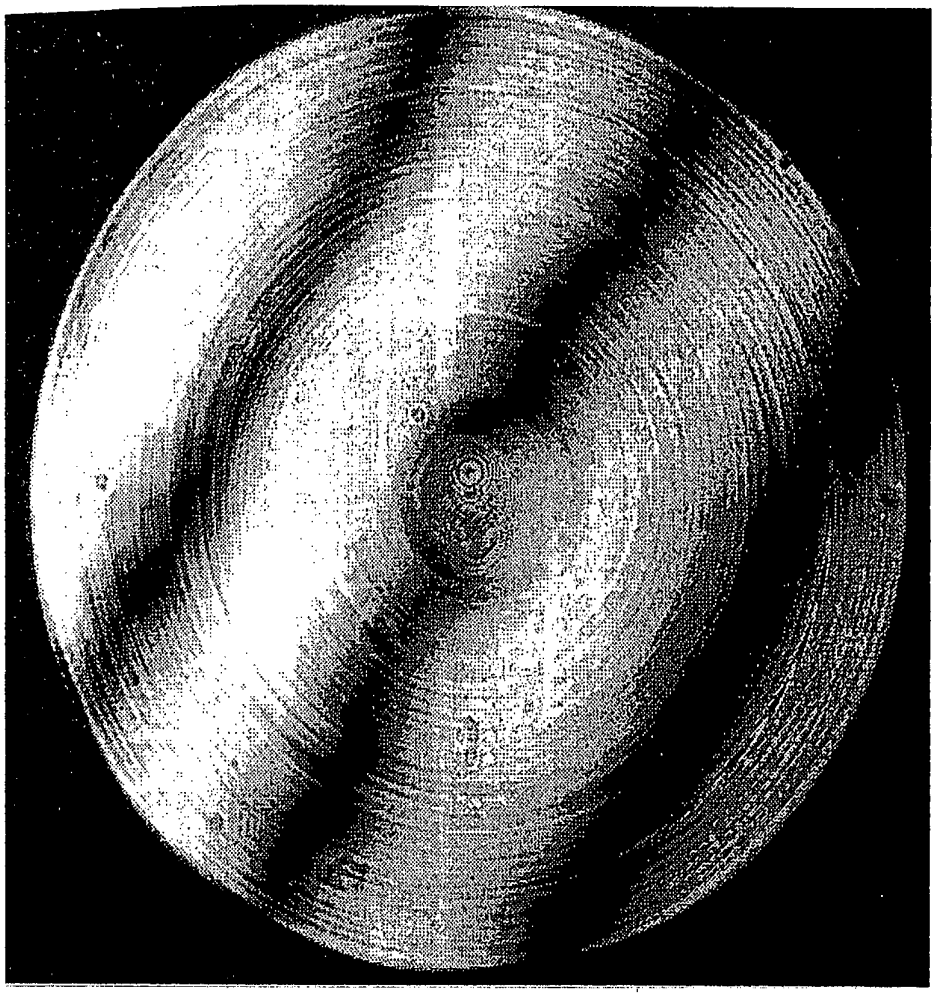


FIG. 6



Interferogram of cut Aluminum sphere
by new diamond turning machine

FIG. 7



Interferogram of cut Al sphere after 6 hours
by new diamond turning machine

FIG. 8

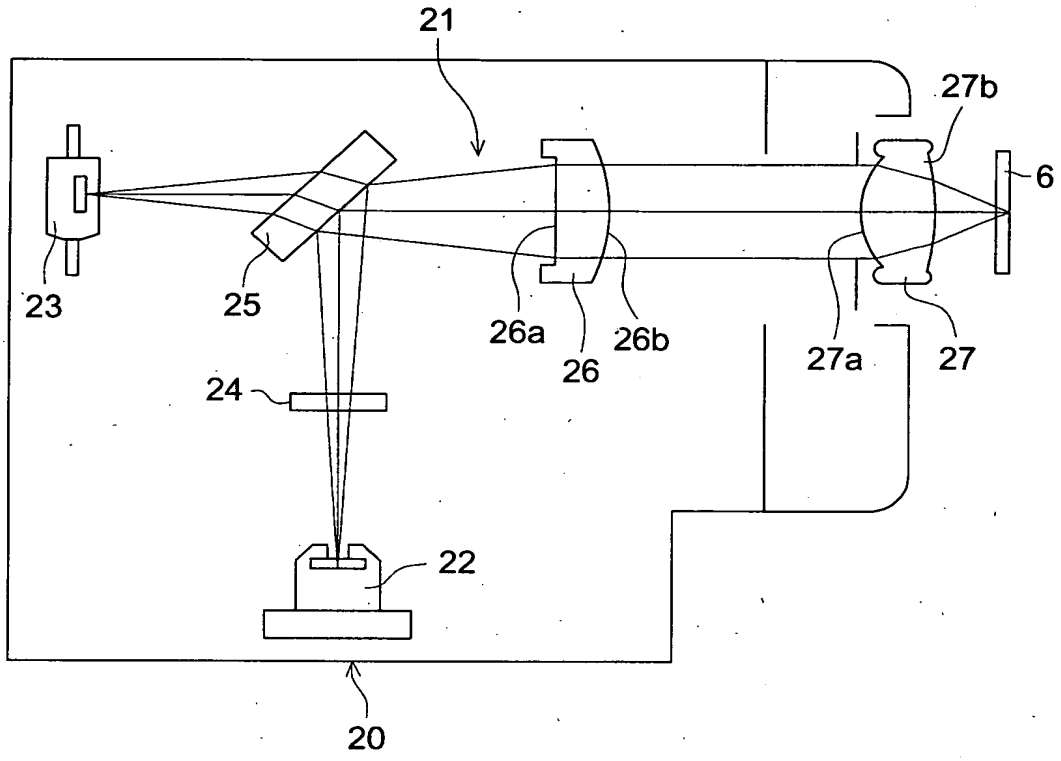

21
27b
6
23
25
26a
26
26b
27a
27
24
22
20

FIG. 9

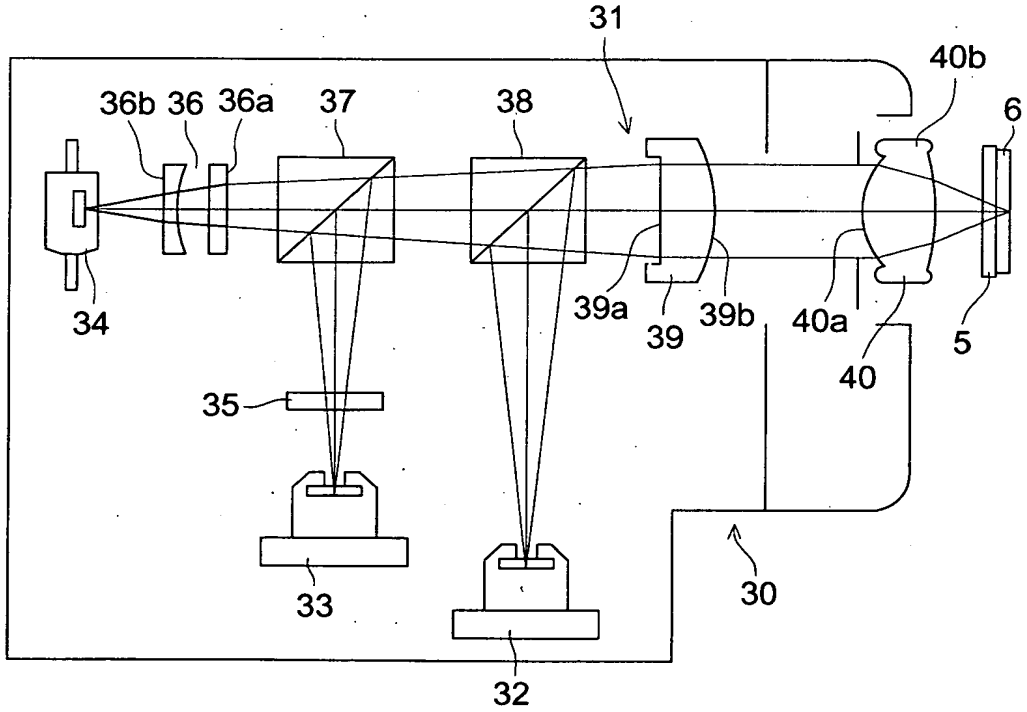
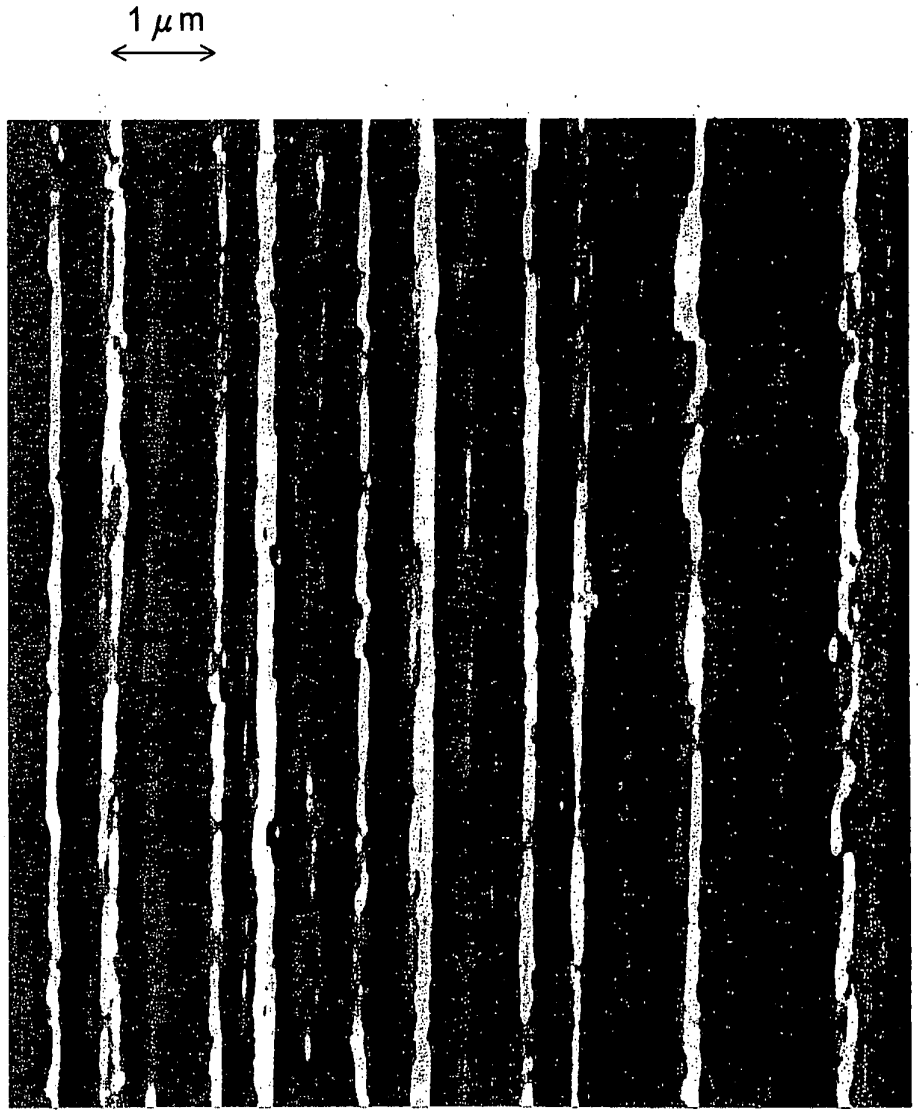
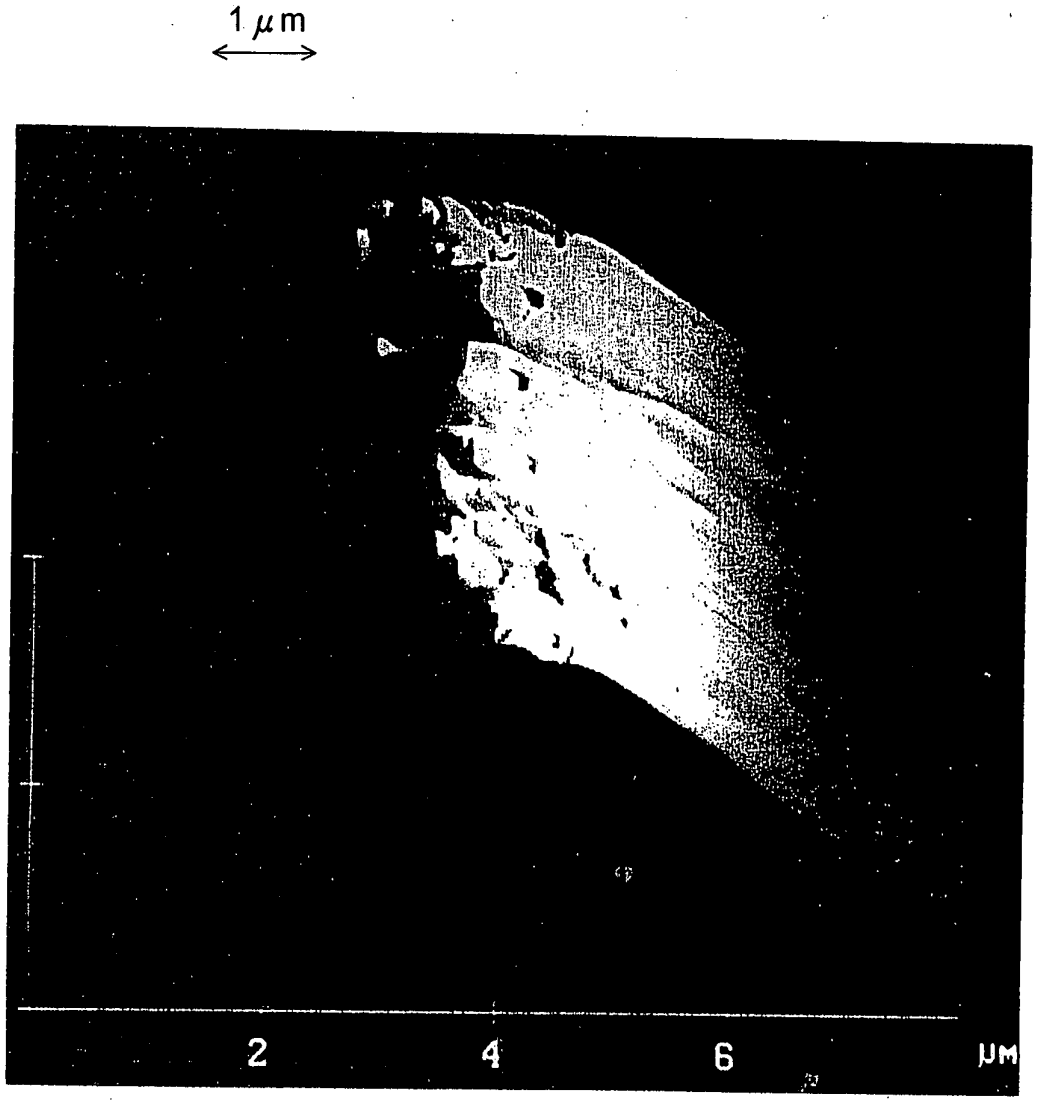

31
40b
36b
36
36a
37
38
6
34
39a
39
39b
40a
40
5
35
33
30
32

FIG. 10



Cut ENP surface after 3 km length cutting

FIG. 11



Diamond tool cutting edge after 3 km length ENP cutting

FIG. 12

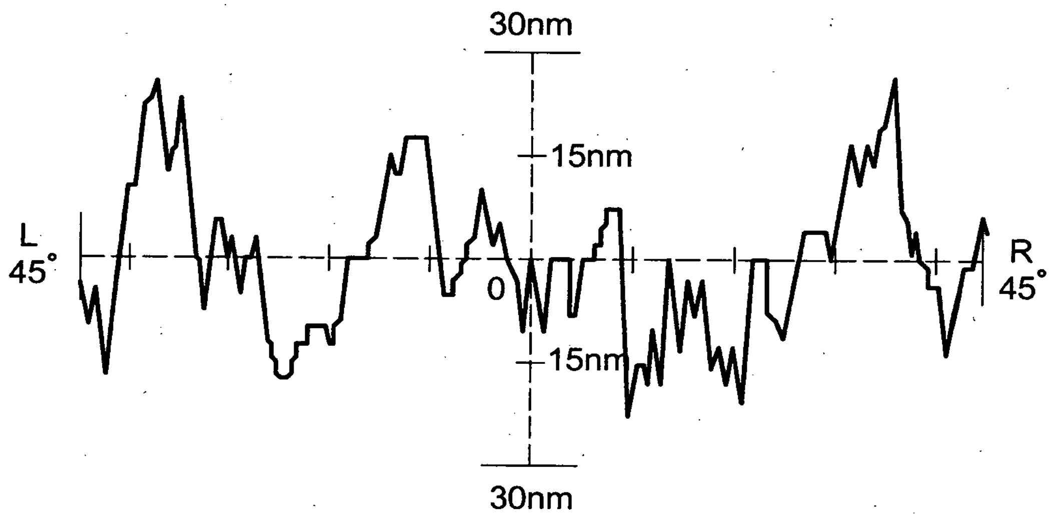


FIG. 13